SONY

3-800-184-22 (1)

Satellite Antenna

for SAT-A1 and SAT-B1 Satellite Receivers

Installation Manual

DSS®
DIGITAL SATELLITE SYSTEM

SAN-18D1
SAN-18S1

© 1995 by Sony Corporation

Precautions

Warnings

Avoid contact with high voltage electrical equipment. Contact with power lines, lights and circuits may prove fatal.

Avoid contact with underground utility lines. Check with your local utility companies before digging in your yard if you are unsure of the location of your electric, telephone, gas, water or sewer lines.

Installation

- ❑ Read through the entire manual before you attempt any installation and keep this document for future reference.
- ❑ Do not use power tools to tighten the bolts. Hand tighten only.
- ❑ Check zoning codes, covenants and community restrictions in your area before installation.
- ❑ Choose an installation site that is structurally sound and able to withstand severe storm conditions.
- ❑ Do not attempt to install the antenna in rainy or windy conditions.
- ❑ Do not install the antenna where it can be bumped or jarred because this might cause bodily injury and damage the antenna.
- ❑ Installation on aluminum or vinyl siding is not recommended.
- ❑ Installation on composite materials is not recommended.
- ❑ Installation on a chimney should be used only when no other locations are available.
- ❑ Ground the antenna and cables to prevent possible damage from electrical charges and lightning strikes. Grounding and installation should comply with local codes and the appropriate sections of the National Electrical Code (NEC). Refer to the National Electrical Codes in the Appendix for specific information on grounding requirements.

Owner's Record

The model and serial numbers are located on the back of the satellite antenna. Record the numbers on the spaces provided below and refer to them whenever you call your sales and/or service representative regarding this product.

Model No. _____

Serial No. _____

Customer Support

To arrange for the installation of your DSS system, call the dealer from whom you purchased your system.

For general information, or to resolve problems related to the operation of your satellite receiver or antenna, contact your Sony DSS dealer. If your dealer is unable to answer your questions, call the Sony DSS Customer Support line at 1-800-838-7669.

Signal Seeker is an official trademark of Sony Corporation.

DIRECTV® and DSS® are registered trademarks of DIRECTV, Inc., a unit of Hughes Electronics Corporation.

Contents

Chapter 1 Introducing the Satellite Antenna

Welcome **6**
Installation Overview **7**
Unpacking the Satellite Antenna **8**

Chapter 2 Selecting an Antenna Location

Locating the Satellite **10**
Choosing an Installation Site **13**

Chapter 3 Installing the Antenna

Installing the Mast or a Pole **16**
Installing the Antenna **31**
Installing the Cables **33**
Aiming the Antenna **36**
Grounding the Antenna and Cables **43**

Appendix Other Information

National Electrical Code **48**
Specifications **50**
Limited Warranty **51**
Glossary **53**

Index **55**

Chapter 1

Introducing the Satellite Antenna

This chapter introduces the satellite antenna.

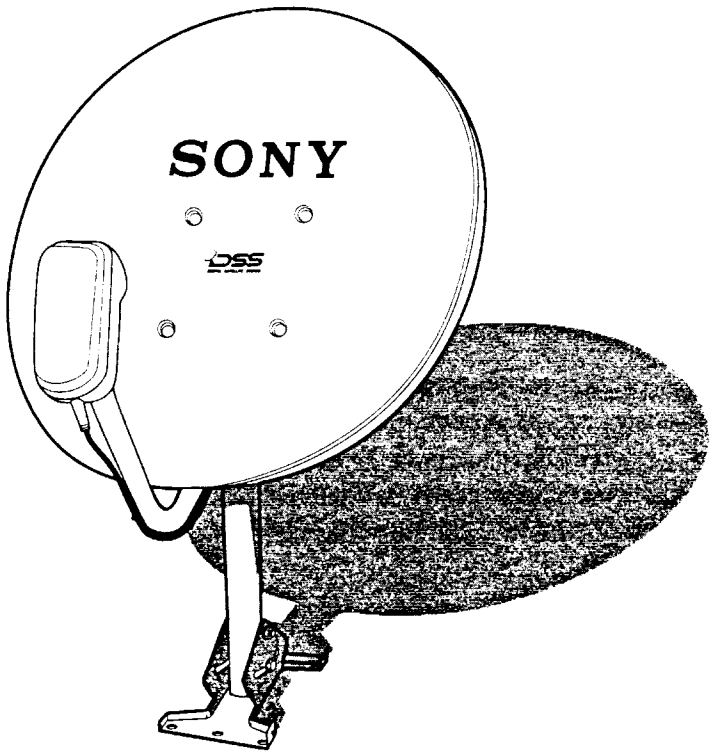
The sections covered in this chapter are:

- ❑ Welcome **6**
- ❑ Installation Overview **7**
- ❑ Unpacking the Satellite Antenna **8**

Welcome

Congratulations on your purchase of the Sony brand Digital Satellite System (DSS®). This product will enhance your overall entertainment experience.

This installation manual is provided to help you plan and complete the installation of your satellite antenna. The step-by-step instructions are organized in sequential order for your convenience. Read through the entire manual once before you attempt to install the antenna.



Installation Overview

The satellite antenna can be installed in a few hours. You may choose to install it yourself, or you may prefer to have it professionally installed. If you plan on installing the antenna yourself, you should be able to:

- ❑ Use a power drill, magnetic compass and bubble level.
- ❑ Drill a hole through an exterior wall of your house.
- ❑ Locate plumbing, electrical utilities and support beams hidden in your walls.
- ❑ Comply with local building and electric codes.
- ❑ Route cable under floors and through walls.

Have your antenna professionally installed if you do not feel comfortable performing any of these functions. Your authorized Sony retailer can provide a referral to a professional contractor in your area who has been trained to install the Sony brand Digital Satellite System (DSS).

If you decide to install the antenna yourself, use this manual to help you plan and complete the installation. To further assist you, Sony has an Installation Kit which is sold separately. The kit contains an installation video and an assortment of cables, bolts, grounding supplies and other items needed for most installations.

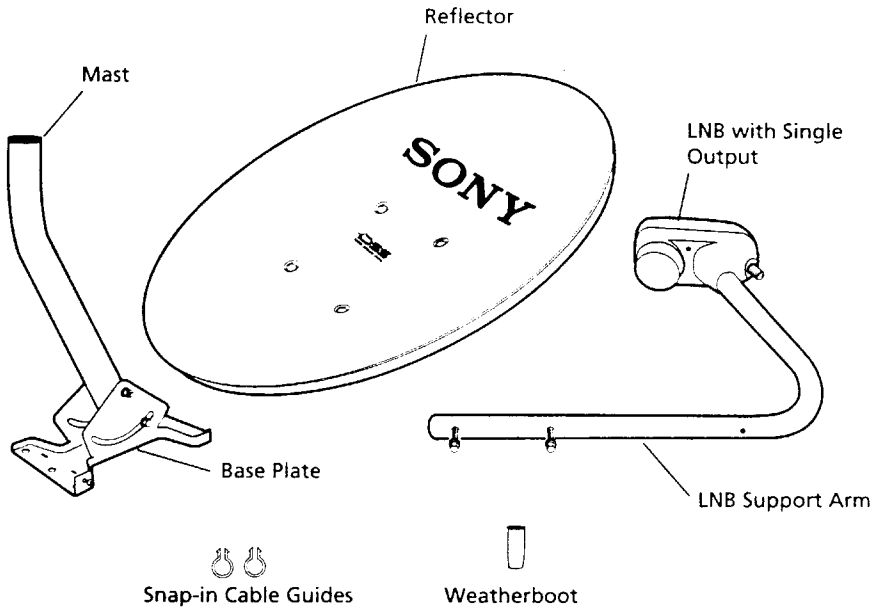
Installation Kit contents:

1 RG-6 coaxial cable with weatherproof F-connectors and weatherboot (75 ft.)
1 RG-6 coaxial cable with weatherproof F-connectors and weatherboot (25 ft.)
1 Silicone sealant (1 oz.)
4 Cable ties (11 in.)
8 Cable clips
4 Togglers
4 Double expansion anchors
4 Lag screws ($^5/_{16}$" x 2")
2 Lag screws ($^1/_4$" x 3")
4 Machine screws ($^1/_4$" - 20 x 3")
4 Washers ($^5/_{16}$")
1 Grounding block (dual)
1 Grounding wire (30 ft.)
1 Telephone in-line modular coupler
1 Telephone modular T-connector
2 Telephone line cords with modular connectors (25 ft.)
1 Compass
1 Grounding strap
1 Installation Video Guide

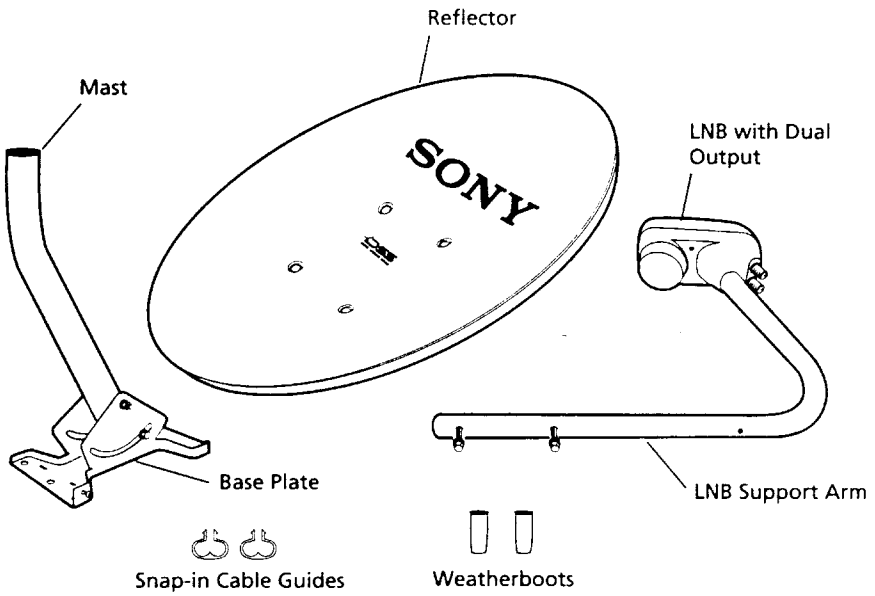
Unpacking the Satellite Antenna

Depending on which model you purchased, the carton should contain either an SAN-18S1 single output or an SAN-18D1 dual output satellite antenna.

SAN-18S1



SAN-18D1



Chapter 2

Selecting an Antenna Location

This chapter contains instructions for selecting a location to install the satellite antenna.

The sections covered in this chapter are:

- ❑ Locating the Satellite **10**
- ❑ Choosing an Installation Site **13**

Locating the Satellite

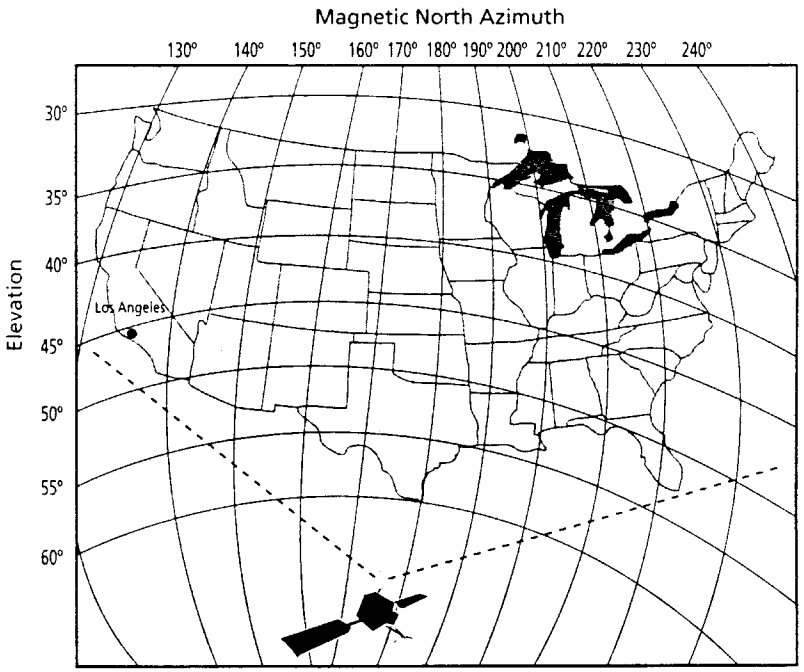
Before you can select a location to install the antenna, you need to find the direction and elevation of the satellite relative to your house. After you know where the satellite is located, you can find a suitable location to install the antenna. Use the following instructions to identify the directional coordinates and locate the satellite.

Use the map to estimate the directional coordinates:

Use the map below to estimate the directional coordinates of the DSS satellite. You may also obtain the coordinates by using the on-screen zip code or latitude/longitude features described on pages 36-38.

Notes

- *At this stage it is not necessary to find the exact location of the satellite. A rough estimate is sufficient.*
- *The satellite is located due south of Texas over the equator.*
- *The azimuth is a compass heading.*



1. Find your location on the map.
2. Use the azimuth and elevation markings on the top and side of the map to estimate the directional coordinates of the satellite.

   (For example, the directional coordinates for Los Angeles are: Azimuth: 135 and Elevation: 45.)
3. Record the directional coordinates on the spaces provided below.

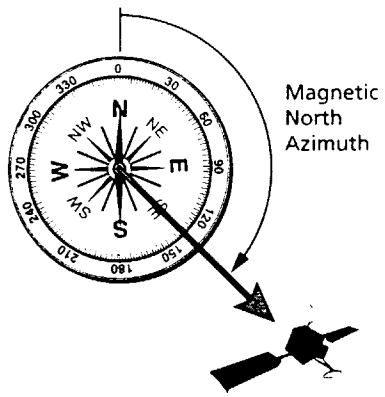
   Azimuth: _____ Elevation: _____

These directional coordinates will be used on the following pages to locate the satellite in the sky. Continue with the instructions on the next page to find the satellite direction with the azimuth.

Find the satellite direction with the azimuth:

The azimuth is a compass heading used to determine the direction of the satellite relative to your house. Once you know where the satellite is located you can choose an installation site that has an unobstructed view of the satellite.

1. Take a compass outdoors. Hold it level to allow the needle to rotate freely.
2. Rotate the compass until the dial aligns with the magnetic needle which is pointing North.
3. The compass dial has numbers ranging from 0° to 360°. Find the azimuth coordinate you recorded on the previous page on the compass dial.



4. Look in the direction of the azimuth.

The satellite is located in the direction you are facing. Continue with the instructions on the next page to find the elevation of the satellite.

Note

- *The arrow on the compass in this illustration indicates the 135° azimuth from the example on the previous page.*

(continued)

Find the elevation of the satellite:

Use the elevation coordinate you recorded on page 10 to find the elevation of the satellite. Finding the elevation, or angle, of the satellite enables you to choose an installation site that has an unobstructed view of the satellite.

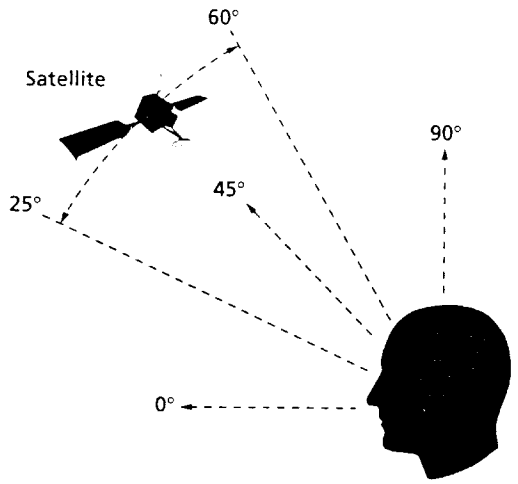
1 Locate three reference points to help you estimate the location of the satellite:

- ❑ 0° — located at the horizon in front of you.
- ❑ 90° — located directly above you.
- ❑ 45° — located midway between 0° and 90°.

2 Use the elevation coordinate you recorded on page 10 and these three reference points to estimate the elevation of the satellite.

Note

- *The position of the satellite in this illustration corresponds to the 45° elevation from the example on page 10.*

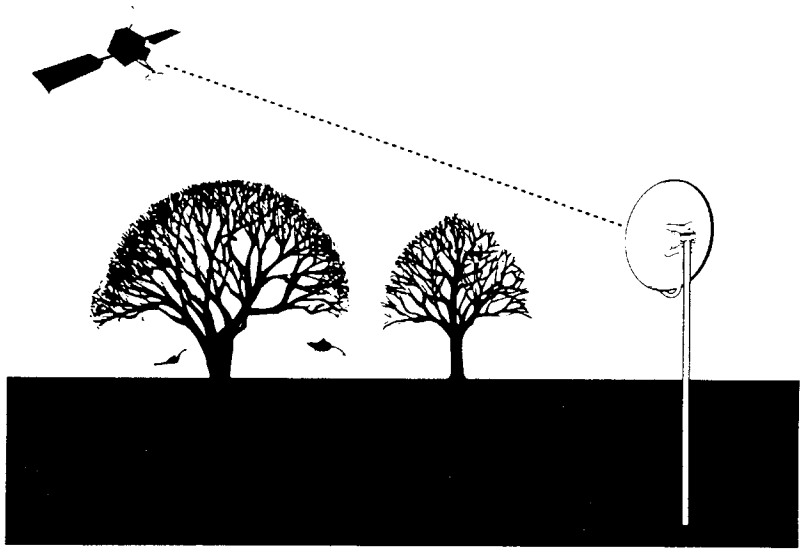


You should now be able to point to the approximate location of the satellite. Use this information when you choose an installation site for the antenna.

Choosing an Installation Site

You now know where the satellite is located in the sky. Keep the location in mind as you look around your property for a good place to install the antenna. Use the following suggestions to ease the installation and extend the life of the antenna:

- ❑ Keep a clear view — avoid areas where trees, buildings and roof overhangs interfere with the satellite signal. Also consider the effects of future tree growth or building construction.
- ❑ Protect the antenna — avoid installing the antenna where it can be bumped or jarred by people, furniture, doors or pets. Also avoid installing under gutters, due to the possibility of icicles or ice buildup.
- ❑ Simplify the installation — try to avoid an installation that requires the use of a ladder.
- ❑ Choose a sturdy site — windy conditions can generate several hundred pounds of pressure on the base plate. To avoid problems, choose an installation site that is structurally sound and able to withstand severe storm conditions.
- ❑ Choose an accessible site — if snow falls where you live, you will need to brush the snow off the antenna.
- ❑ Locate the antenna close to the receiver — cable run should be 100' or less. If more than 100', you must use Sony brand DSS Ampifier EAC-DA1.



(continued)

Where to Install the Antenna

This manual provides instructions for installing the antenna on several surfaces:

- ❑ Metal Pole
- ❑ Wood
- ❑ Brick
- ❑ Cinder Block

Read through the rest of the manual before you begin installing the antenna. Planning the installation will save you time and help you avoid mistakes.

Chapter 3

Installing the Antenna

This chapter provides instructions for installing, aiming and grounding the antenna.

The sections covered in this chapter are:

- ❑ Installing the Mast or a Pole **16**
- ❑ Installing the Antenna **31**
- ❑ Installing the Cables **33**
- ❑ Aiming the Antenna **36**
- ❑ Grounding the Antenna and Cables **43**

Installing the Mast or a Pole

This section contains four different sets of installation instructions. Choose and follow one set, depending on the type of surface on which you install the antenna:

- ❑ Metal Pole, on this page.
- ❑ Wooden Surface, on page 19.
- ❑ Brick Surface, on page 24.
- ❑ Cinder Block Surface, on page 27.

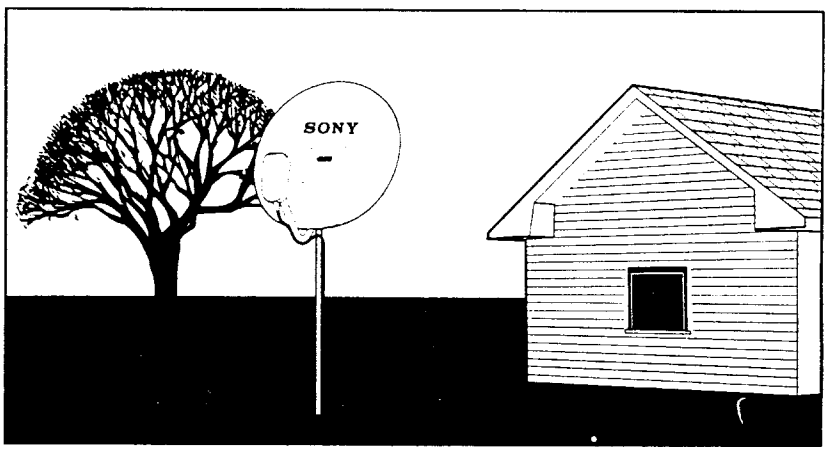
Metal Pole

The antenna can be mounted directly onto a metal pole in your yard. The metal pole should be installed in soil conditions that provide a firm foundation. Do not install a metal pole if your soil contains:

- ❑ Many rocks, which prevent you from digging a hole.
- ❑ Excess moisture, which prevents concrete from curing properly.

Notes

- *The antenna can be mounted on an existing metal pole which meets the installation and material specifications listed in this chapter.*
- *You do not need the mast provided with the antenna for this installation. However, you should store the mast in case you decide to relocate the antenna at a later date.*



Tools and materials needed for this installation:

1 brick
2 bags ready-mix cement
Container to mix cement
Guy wires/wooden stakes
Hacksaw
Level
Metal pole (6' long min. x 1 1/4" - 1 1/2" galvanized steel pipe)
Shovel

➤*Warning*

- *Do not install the antenna near power lines.*

➤*Caution*

- *Avoid underground electric, telephone, gas, water and sewer lines when digging in your yard. Contact your local utility companies for help locating underground utility lines.*
- *Do not install the antenna where it could be bumped or jarred by people, furniture, doors or pets.*
- *Do not attempt any installation in rainy or windy conditions.*

Installation instructions:

Note

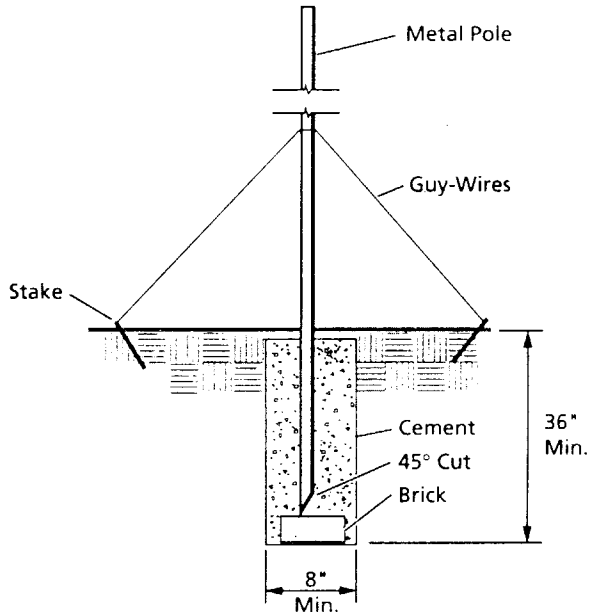
- *Bury the pole 6" below the frost line if you live in an area that experiences freezing temperatures.*

1 Dig a hole at least 8" in diameter and 36" deep.

2 Cut the bottom of the pole at a 45° angle with a hacksaw. This prevents the pole from rotating after installation.

(continued)

3 Place a stone or brick at the bottom of the hole. The 45° cut on the bottom of the pole should sit on top of the stone or brick. This allows the cement to cover the angled cut.

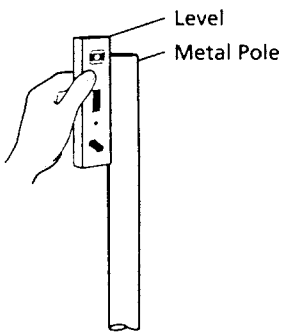


Note

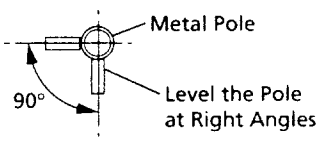
- *Stop pouring the cement three inches below the top of the hole if you intend to cover the cement with dirt or replant grass after the cement has dried.*

4 Mix ready-mix cement and pour it into the hole.

5 Hold the pole upright and level it with a bubble level. Place the level along the side of the pole and take at least two readings 90° (at right angles) from each other. The pole must be vertically level to aim the antenna properly.



Side View



Top View

6 Secure the pole with guy wires or wooden braces while the cement is drying.

7 Check to make sure the pole is still level and adjust if necessary.

8 Wait for the cement to dry completely before you remove the guy wires or wooden braces.

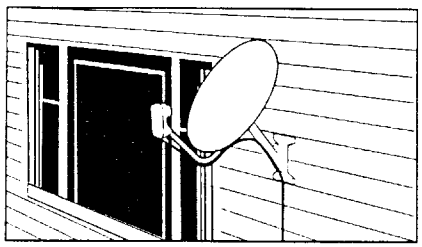
Proceed to *Installing the Antenna* on page 31.

Wooden Surface

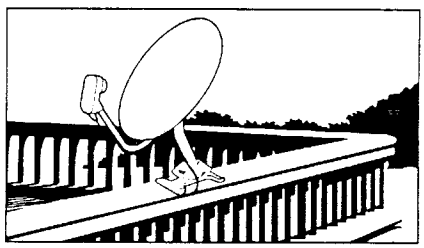
The satellite antenna can be installed on a variety of wooden surfaces. This section provides instructions for mounting the mast onto the following:

Side of your house

Installation on aluminum or vinyl siding not recommended.

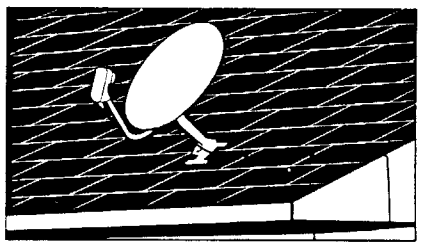


Deck railing or floor



Roof

Installation on wooden roof and rafter under asphalt shingles only.



Do not install the antenna on composite materials unless a wall stud or rafter can be located behind the surface. These wood products are not strong enough by themselves to secure the antenna properly. The materials to avoid are:

- ❑ Strand Board
- ❑ Chip Board
- ❑ Fiberboard
- ❑ Particleboard

(continued)

Tools and materials needed for this installation:

Drill bits ($^1/_8$", $^3/_{16}$")
*Lag screws (2) $^1/_4$" x 3", (4) $^5/_{16}$" x 2"
Level
Pencil/chalk
Power drill
*Silicone sealant
Tape measure
*Washers (4) $^5/_{16}$"
Wrench ($^3/_8$")

**Included in the Installation Kit.*

➤Warning

- *Do not install the antenna near power lines.*

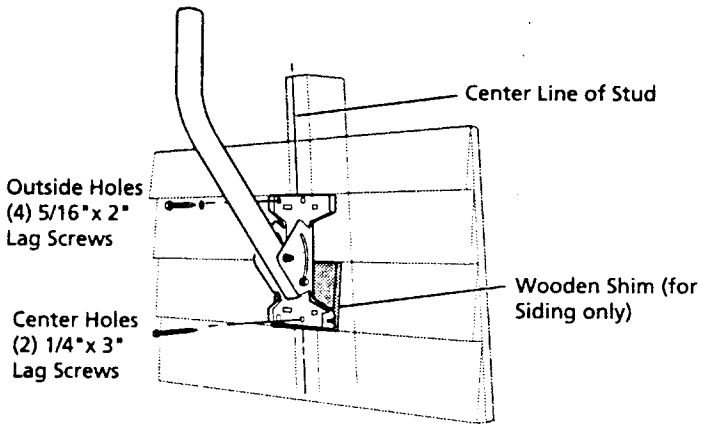
➤Caution

- *Do not install the antenna where it could be bumped or jarred by people, furniture, doors or pets.*
- *Do not attempt any installation in rainy or windy conditions.*

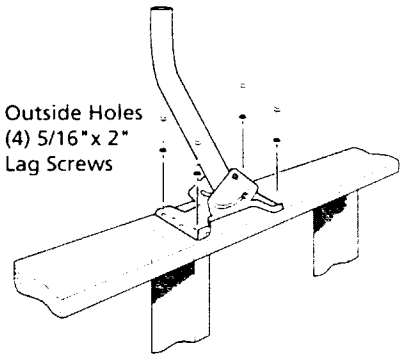
Installation instructions:

1 Choose a secure location to install the base plate:

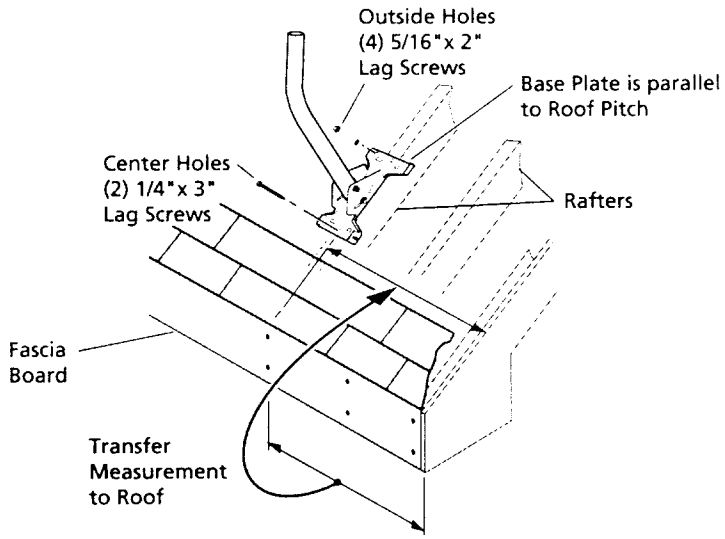
- ❑ Side of your house — find a wall stud on which you can secure the base plate. Wall studs can be located by a vertical line of nails where siding is attached to the house, or with a stud finder.



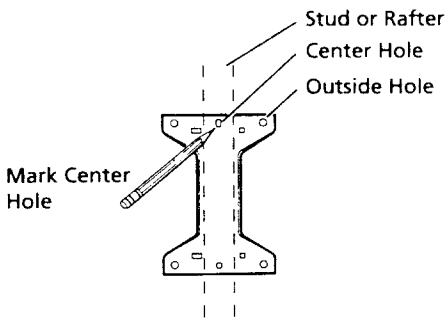
- ❑ Deck railing or floor — the base plate can be secured to the railing or floor.



- ❑ Roof — find a rafter on which you can install the base plate. Rafters can be located by the nails which hold the fascia board onto the rafters. Do not mount the mast on a roof overhang where there are no rafters.



2 Position the two center holes of the base plate over a stud or rafter, and hold the base plate in position.



(continued)

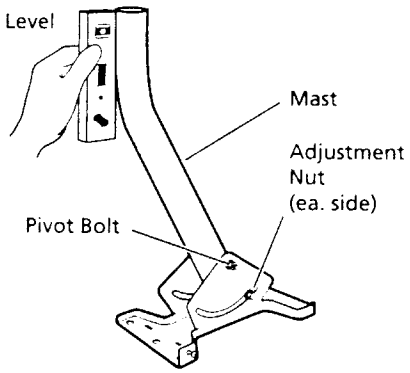
3 Use a level to determine whether the mast can be vertically aligned before you drill any holes.

A) Loosen the pivot bolt and adjustment nut that connect the bottom of the mast to the base plate and align the mast in a vertical position.

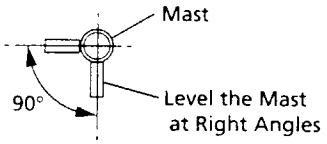
B) Place the level along the top part of the mast and take two readings 90° apart from each other.

C) Tighten the pivot bolt and adjustment nut.

D) Use wooden shims to correct any alignment problems. If shims will not correct the problem, look for another location to mount the antenna.



Side View



Top View

4 Realign the top center hole of the base plate over the stud, frame or rafter and mark with a pencil.

5 Remove the mast and drill a 1/8" x 3" pilot hole.

6 Reposition the mast and attach it with a 1/4" x 3" lag screw. Do not tighten too securely to allow for adjustment.

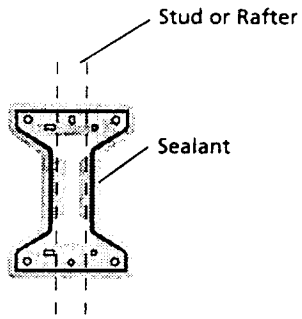
7 Check to make sure the mast is still level and adjust if necessary.

8 Mark the remaining four outside holes and the lower center hole.

9 Remove the base plate and drill pilot holes for the remaining screws:

- ❑ Four outside holes — drill 3/16" x 2" holes.
- ❑ Lower center hole — drill a 1/8" x 3" hole.

10 Apply silicone sealant to all six pilot holes and around the bottom edge of the base plate where it makes contact with your house before bolting it down tight. This will prevent water seepage.



11 Bolt the base plate into position using:

- ❑ Four outside holes — 5/16" x 2" lag screws and 5/16" washers.
- ❑ Two center holes — 1/4" x 3" lag screws.

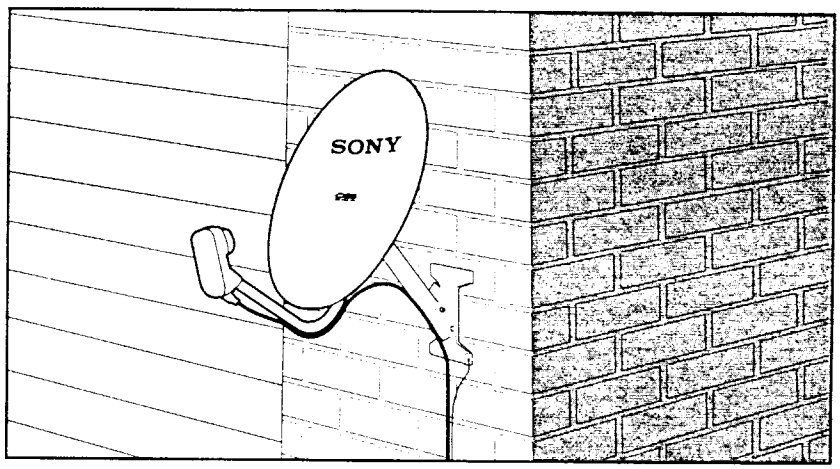
Proceed to *Installing the Antenna* on page 31.

(continued)

Brick Surface

The satellite antenna can be installed on brick surfaces. This section provides instructions on how to mount the mast onto the following:

- ❑ Side of your house
- ❑ Wall



Tools and materials needed for this installation:

*Double expansion anchors (4)
Hammer
Level
*Machine screws (4) 1/4" - 20 x 3"
Masonry drill bit (1/2")
Pencil
Power drill
*Washers (4) 5/16"
Wrench (3/8")

**Included in the Installation Kit.*

Note

- *The double expansion anchors you use should be able to withstand 300 pounds of pull-out pressure.*

➤Warning

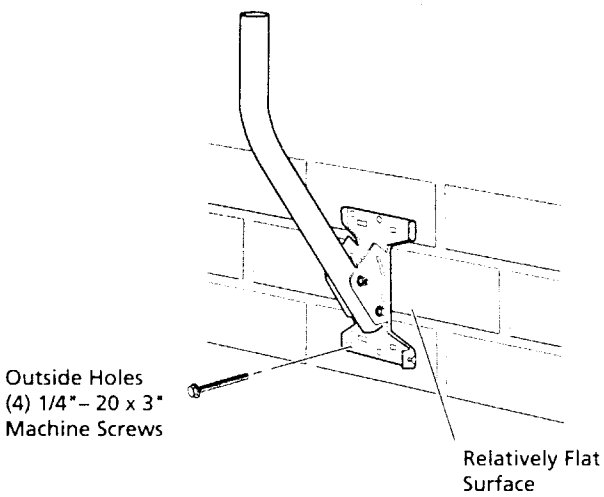
- *Do not install the antenna near power lines.*

➤Caution

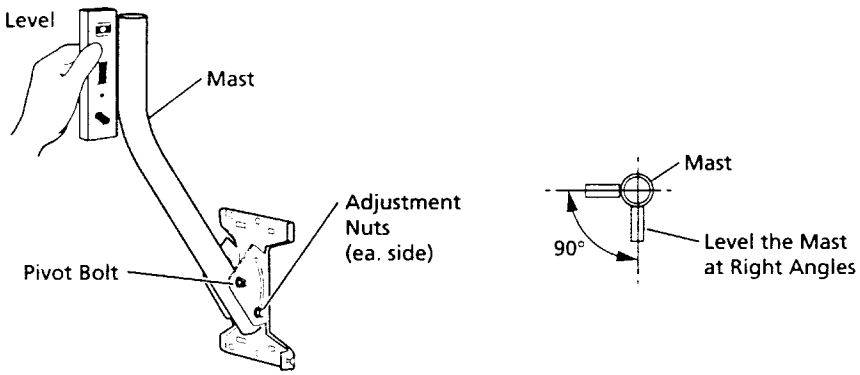
- *Do not install the antenna on stucco or imitation masonry unless the base is made of cinder block or brick.*
- *Do not install the antenna where it could be bumped or jarred by people, furniture, doors or pets.*
- *Do not attempt any installation in rainy or windy conditions.*

Installation instructions:

1. Choose a flat and secure location to install the antenna and hold the base plate in position.
2. Position the four outer holes of the base plate over the surface of the bricks. Do not drill into the mortar around the bricks.



3. Use a level to determine whether the mast can be vertically aligned before you drill any holes.



Side View Top View

A) Loosen the pivot bolt and adjustment nuts which connect the bottom of the mast to the base plate and align the mast in a vertical position.

B) Place the level along the top part of the mast and take two readings 90° apart from each other.

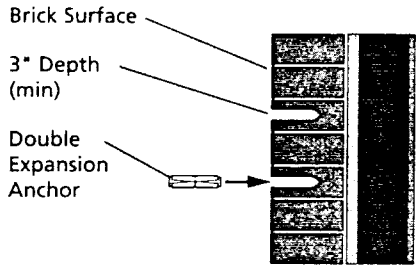
C) Tighten the pivot bolt and adjustment nuts.

(continued)

4 Mark the upper left hole of the base plate with a pencil.

5 Remove the mast and drill a 1/2" x 3" hole.

6 Clean out the hole and insert a double expansion anchor. It should fit snugly. Use a hammer to gently tap the anchor into place until it is flush with the wall.



Brick Side View

7 Use a 1/4" - 20 x 3" machine screw to attach the base plate to the anchor. Do not tighten too securely to allow for adjustment.

8 Check to make sure the mast is still level.

Note

- *It is not necessary to bolt the two center holes in this procedure.*

9 Mark the remaining three outer holes, and repeat steps 5 through 8.

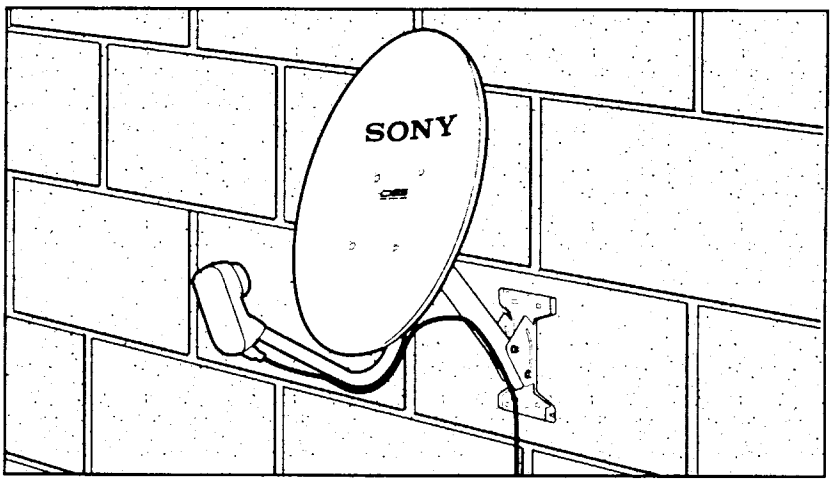
10 Tighten all four screws.

Proceed to *Installing the Antenna* on page 31.

Cinder Block Surface

The satellite antenna can be installed on cinder block surfaces. This section provides instructions on how to mount the mast onto the following:

- ❑ Side of your house
- ❑ Wall



Tools and materials needed for this installation:

You will need the following tools and materials for this installation:

Hammer
Level
*Machine screws (4) 1/4" - 20 x 3"
Masonry drill bit (1/2")
Pencil
Power drill
*Togglers (4)
*Washers (4) 1/4"
Wrench (3/8")

**Included in the Installation Kit.*

➤Warning

- *Do not install the antenna near power lines.*

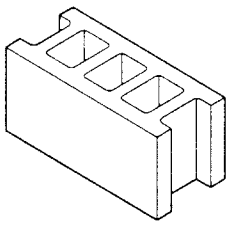
➤Caution

- *Do not install the antenna where it could be bumped or jarred by people, furniture, doors or pets.*
- *Do not attempt any installation in rainy or windy conditions.*

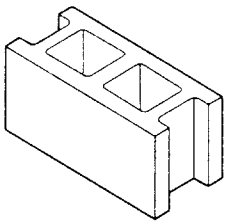
(continued)

Installation instructions:

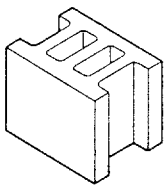
1. Choose a flat and secure location to install the antenna.
2. Tap the cinder blocks with a hammer to find the hollow center cores.



16" Three Core

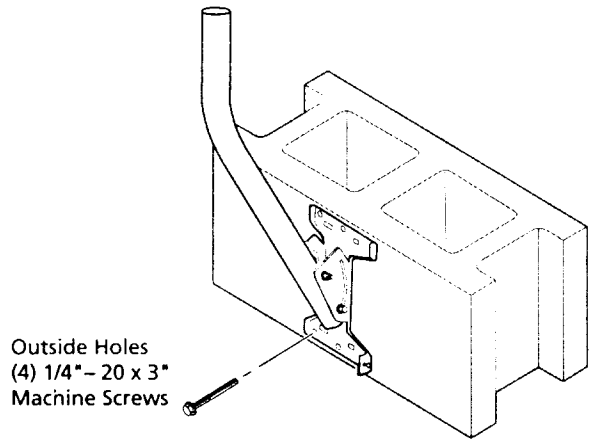


16" Two Core

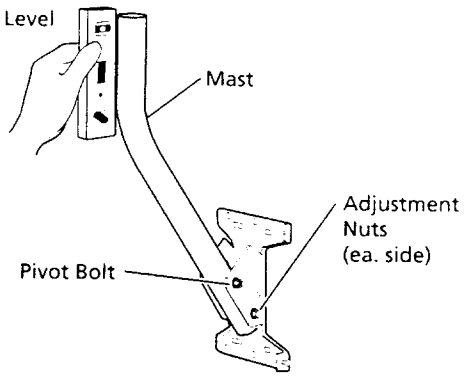


8" Two Core

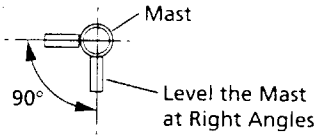
3. Position the four outer holes of the base plate over the hollow center cores of the cinder block and hold the base plate in position.



4 Use a level to determine whether the mast can be vertically aligned before you drill any holes.



Side View



Top View

A) Loosen the pivot bolt and adjustment nuts that connect the bottom of the mast to the base plate and align the mast in a vertical position.

B) Place the level along the top part of the mast and take two readings 90° apart from each other.

C) Tighten the pivot bolt and adjustment nuts.

5 Mark the upper left hole of the base plate with the pencil.

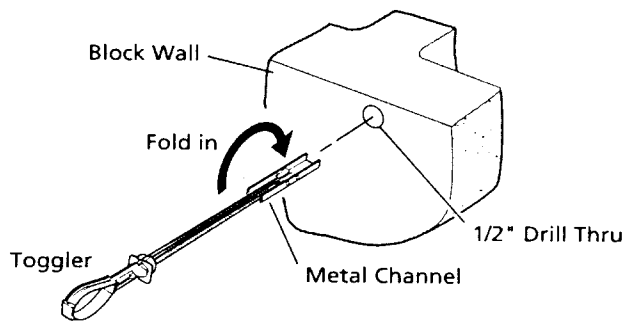
6 Remove the mast and drill a $^1/_2$" hole.

Note

- *Fill mistakes with mortar or silicon sealant.*

7 Install a toggler.

A) Fold the metal channel flat against the toggler and insert it into the hole until the channel opens.

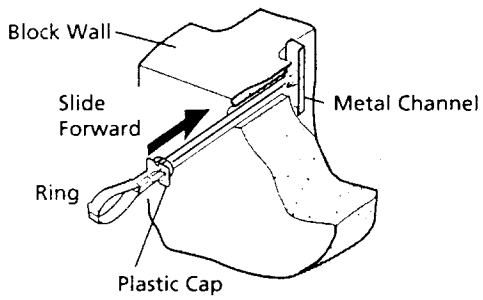


(continued)

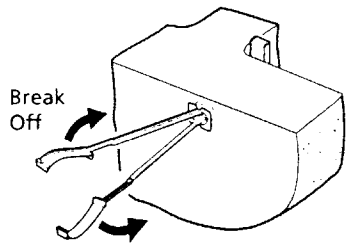
Note

- *The toggler must lie completely flat against the inside of the cinder block to be effective.*

B) Pull the toggler toward you to apply tension while sliding the plastic cap until it is snug against the wall.



C) Break the ring along the center perforation and push the two halves away from each other. Push them toward the wall until they break at the plastic cap.



8 Use a 1/4" - 20 x 3" machine screw to attach the mast to the cinder block. Do not tighten the screw too securely to allow for adjustment.

9 Check to make sure the mast is still level.

10 Mark the remaining three outer holes, and repeat steps 6 through 9.

11 Tighten all four bolts.

Proceed to *Installing the Antenna* on page 31.

Installing the Antenna

This section contains instructions for installing the antenna. There are two procedures you need to complete:

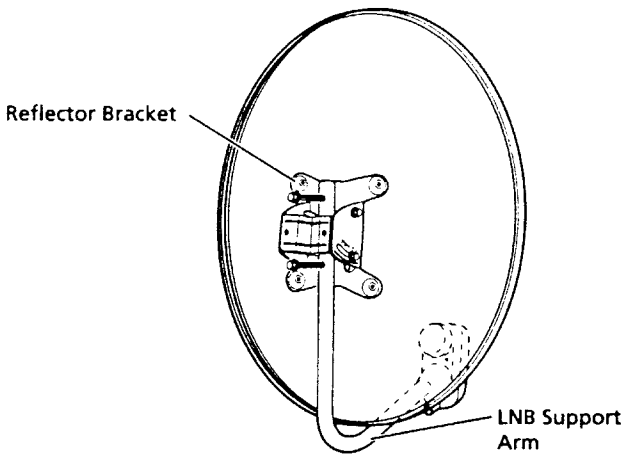
- ❑ Assembling the Antenna
- ❑ Mounting the Antenna on the Mast or Pole

Tools needed to install the antenna:

Phillips screwdriver

Assembling the Antenna

Assemble the antenna by bolting the LNB support arm onto the reflector.



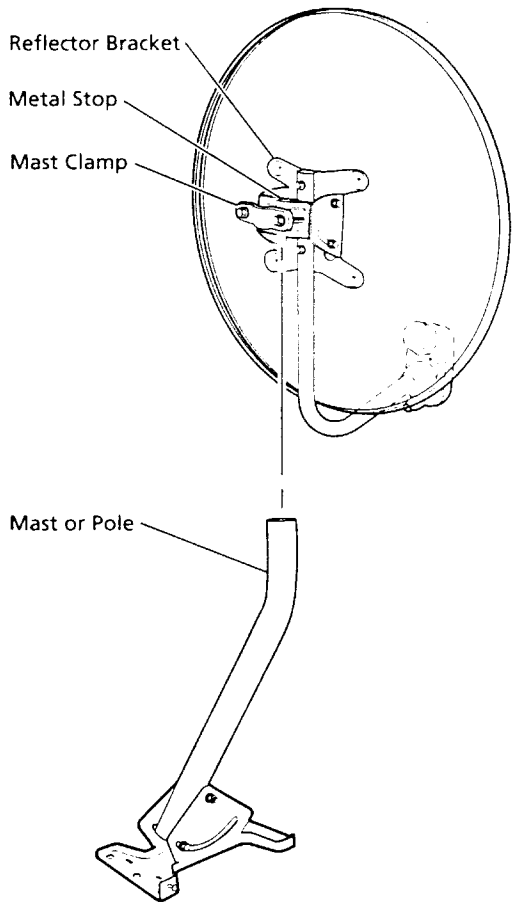
1. Place the end of the LNB support arm against the back of the reflector bracket and align the two screw holes.
2. Screw the two machine screws in the LNB support arm into the reflector bracket and tighten evenly (torque 36~45 lb-in). Do not overtighten.

The antenna is assembled and is now ready to be mounted on the mast or pole you installed earlier.

(continued)

Mounting the Antenna on the Mast or Pole

Mount the antenna by attaching the pre-assembled mast clamp on the reflector to the mast or pole.



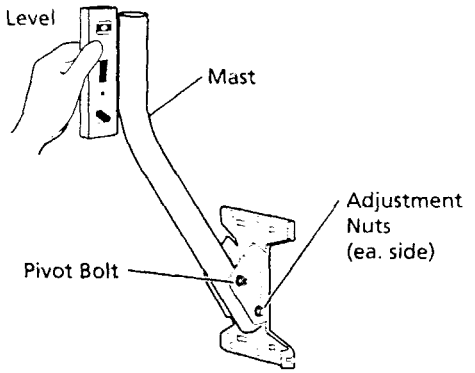
1. Loosen the two screws that attach the mast clamp to the reflector bracket.
2. Lower the antenna onto the mast or pole until it rests against the metal stop.
3. Tighten the two clamp screws evenly. Do not over tighten because they will need to be loosened when you aim the antenna.

Note

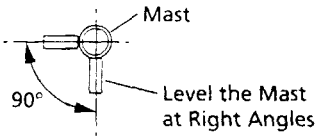
- *Remove the metal stop to mount the antenna below the top of a metal pole. Make sure the antenna tilts freely before securing the bolts.*

The antenna is now in place and is ready to have cables attached. Follow the instructions in the next section to install the cables.

4 Use a level to determine whether the mast can be vertically aligned before you drill any holes.



Side View



Top View

A) Loosen the pivot bolt and adjustment nuts that connect the bottom of the mast to the base plate and align the mast in a vertical position.

B) Place the level along the top part of the mast and take two readings 90° apart from each other.

C) Tighten the pivot bolt and adjustment nuts.

5 Mark the upper left hole of the base plate with the pencil.

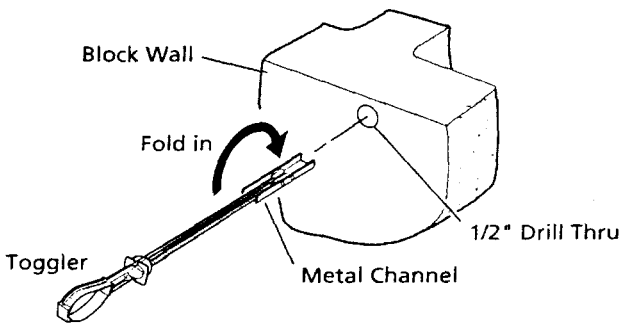
6 Remove the mast and drill a 1/2" hole.

7 Install a toggler.

A) Fold the metal channel flat against the toggler and insert it into the hole until the channel opens.

Note

- *Fill mistakes with mortar or silicon sealant.*



(continued)

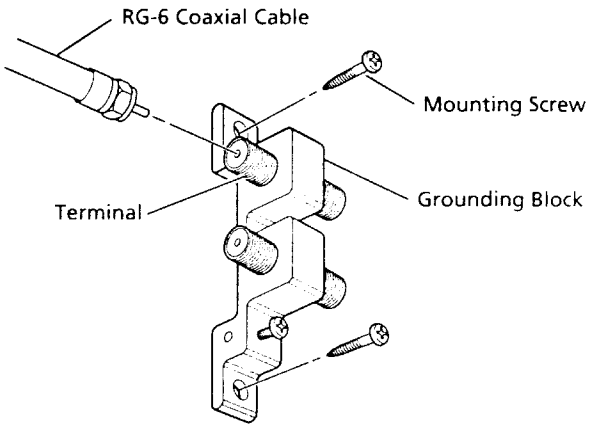
3 Take up any slack in the cable before pressing the snap-in cable guides into the holes. Begin at the LNB and work your way toward the mast or pole.

4 Use cable ties to secure the cable to the mast or metal pole.

5 Install a grounding block onto the side of your house. The grounding block should be installed on the exterior wall of the room where the receiver will be located.

Notes

- *The connectors you attach to the grounding block should be waterproof type.*
- *Protect exposed terminals by wrapping them in tape.*



6 Route the cable from the antenna to the grounding block. Take the most direct route and avoid these problems:

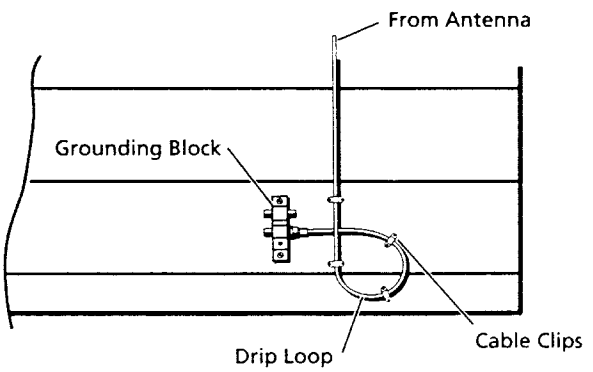
- ❑ Do not place the cable where it can be damaged by lawn mowers, people or pets.
- ❑ Do not bend the cable beyond its normal flexibility.
- ❑ Do not sever the cable or the cable insulation.
- ❑ Do not use anything other than RG-6 coaxial cable.

Note

- *Drip loops prevent water from leaking into the grounding block.*

7 Use cable clips to make a four to six inch diameter drip loop at the end of the cable.

8 Tightly screw the cable from the antenna onto one of the grounding block terminals.



Connecting the Grounding Block to the Receiver

Connect the grounding block to the receiver with RG-6 coaxial cable to complete the cable installation.

➤ ***Caution***

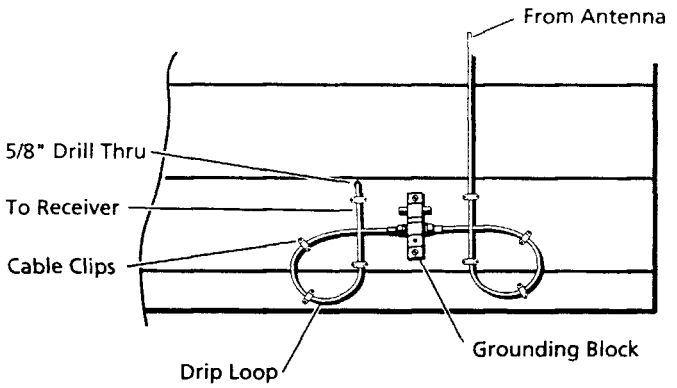
- *Be careful to avoid drilling into electrical, water or gas utility lines.*

Notes

- *The connectors you attach to the grounding block should be waterproof type.*

1 Tightly screw one end of an RG-6 coaxial cable into the grounding block terminal across from the one you connected to the antenna.

2 Use cable clips to make a four to six inch diameter drip loop.



3 Drill a 5/8" hole through the exterior wall near the spot where the receiver will be located.

4 Wrap the end of the cable with tape to protect the center conductor and feed it through the wall into your house.

5 Unwrap the tape and check the connector to be sure the center conductor is straight and undamaged.

Note

- *You can install a wall plate inside your house at this time to give the installation a finished look.*

6 Pull enough cable into the room to reach the back of the receiver.

7 Seal the hole around the cable with silicon sealant.

The antenna and cable are now completely installed. Read the next section to learn about aiming the antenna.

Aiming the Antenna

This section contains instructions for aiming the antenna. There are four procedures you need to complete:

- ❑ Connecting the Antenna to the Satellite Receiver
- ❑ Pointing the Antenna
- ❑ Fine-tuning the Antenna Using the Signal Seeker™
- ❑ Fine-tuning the Antenna Using the Signal Strength Meter

Tools needed to aim the antenna:

Wrench (3/8")
or
Phillips screwdriver

Connecting the Antenna to the Receiver

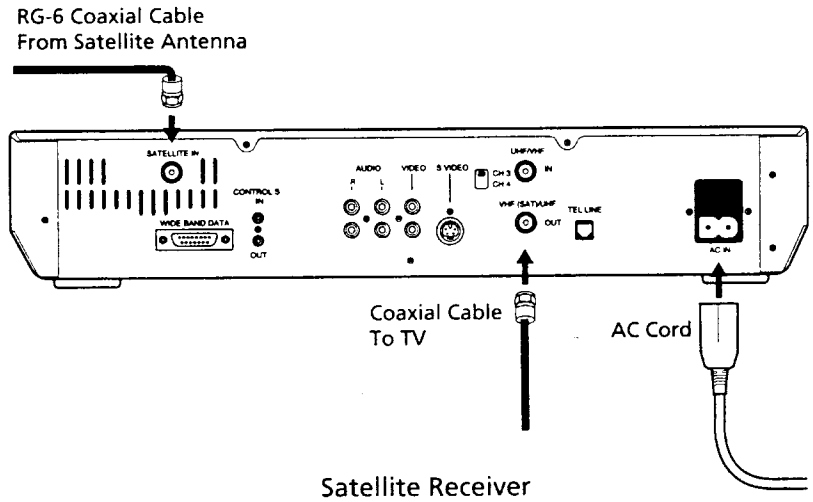
Connect the antenna to the satellite receiver to fine-tune the aim of the antenna.

Note

- *This is a temporary connection which allows you to view the receiver's on-screen displays. Refer to the Sony Digital Satellite Receiver operating instructions for complete connection information.*

1 Turn off both the TV and receiver, and unplug the receiver's AC cord.

2 Connect the RG-6 coaxial cable from the satellite antenna to the SATELLITE IN jack on the back of the receiver.



3 Connect a cable from the VHF (SAT)/UHF OUT jack on the back of the receiver to the UHF/VHF jack on the back of your TV.

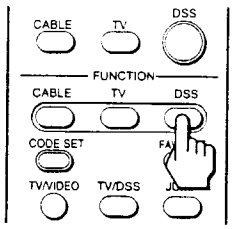
4 Plug in the receiver's AC cord, and turn on both the TV and receiver.

5 Tune the TV to channel 3 or 4 to match the setting of the CH3/CH4 switch on the back of the receiver.

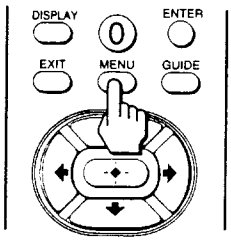
Note

- *Press TV/DSS and confirm that the DSS indicator on the receiver is lit.*

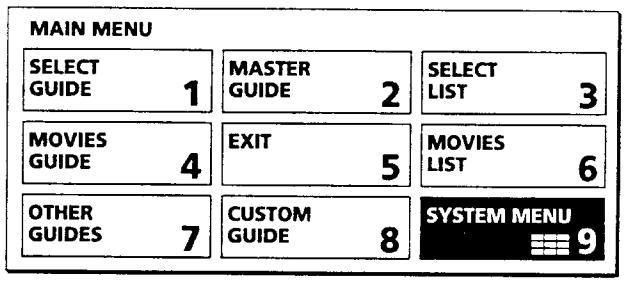
6 Press DSS FUNCTION on the receiver remote control.



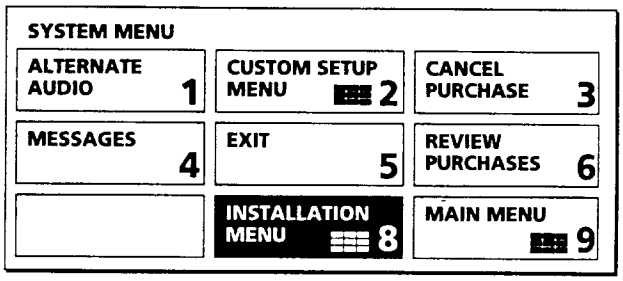
7 Press MENU on the remote control to display the MAIN MENU screen.



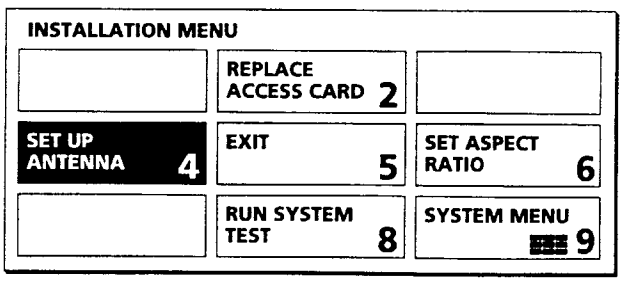
8 Select SYSTEM MENU. Press the ↑ and ↓, and the ← and → buttons on the remote control to highlight, and press ·◆· to select SYSTEM MENU.



9 Select INSTALLATION MENU.



10 Select SET UP ANTENNA.

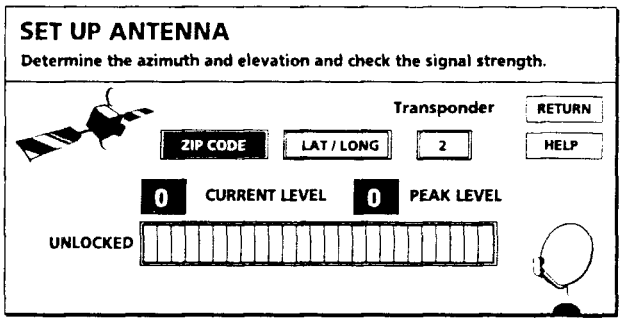


(continued)

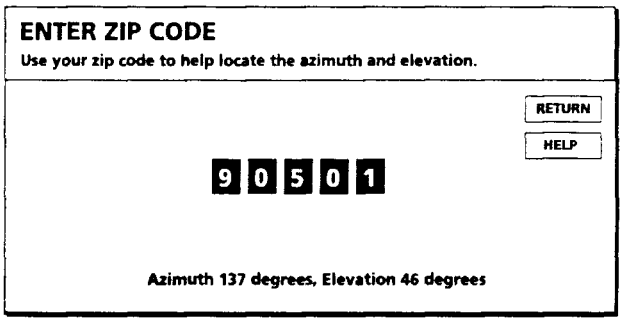
Note

- *You may also get your azimuth and elevation coordinates by selecting LAT/LONG, and inputting your longitude and latitude coordinates.*

11 Select ZIP CODE.



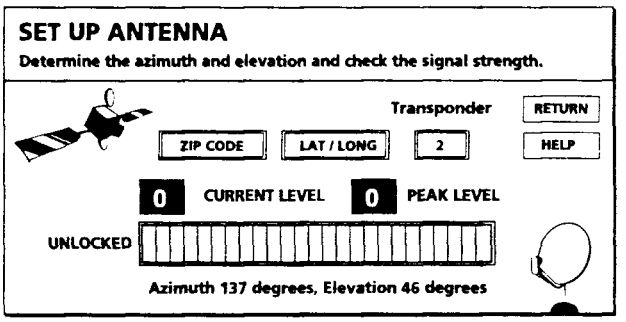
12 Enter your zip code by using the 0 - 9 buttons. Your azimuth and elevation will appear at the bottom of the screen. Select RETURN.


ENTER ZIP CODE
Use your zip code to help locate the azimuth and elevation.
RETURN
HELP
9 0 5 0 1
Azimuth 137 degrees, Elevation 46 degrees

13 Your azimuth and elevation are also displayed at the bottom of the SET UP ANTENNA screen. Above the azimuth and elevation is the Signal Strength Meter you will use to fine-tune the aim of the antenna.

Note

- *The azimuth and elevation for Los Angeles are represented in this illustration.*



This is the screen you use to point and fine-tune the antenna in the following sections.

Pointing the Antenna

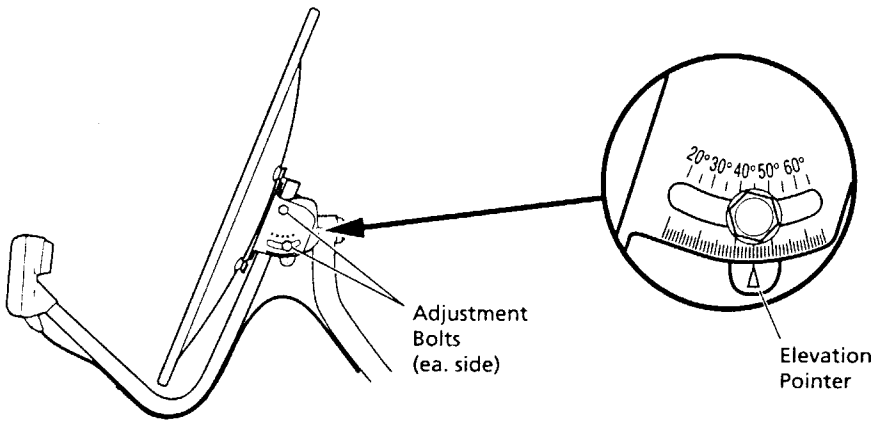
Point the antenna toward the satellite using the azimuth and elevation headings displayed in the ZIP CODE or SET UP ANTENNA screen, described on page 38.

1 Loosen the four adjustment bolts on the back of the antenna.

2 Set the elevation pointer to the correct elevation heading.

Note

- *The position of the antenna in this illustration corresponds to the 45° elevation from the example on page 10.*



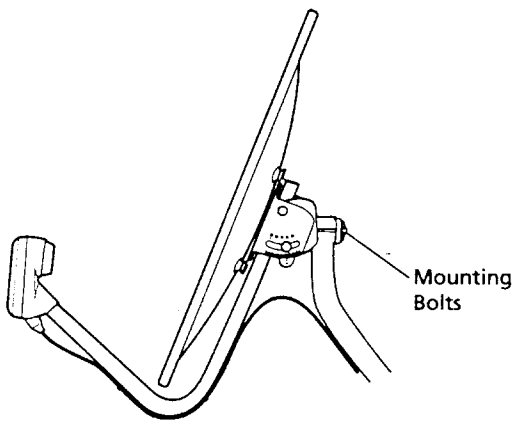
3 Secure the bolts but do not overtighten; you will need to loosen them later to fine-tune the antenna.

4 Loosen the two mounting bolts that hold the antenna onto the mast or pole.

Note

- *Use the compass to find the antenna heading.*

5 Point the antenna toward the correct azimuth heading.

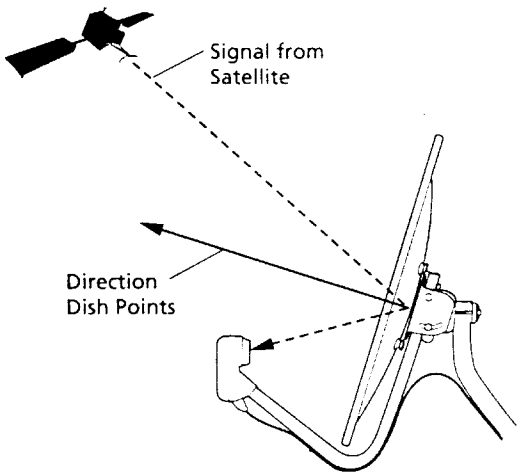


(continued)

6 Secure the bolts but do not overtighten; you will need to loosen them later to fine-tune the antenna.

Note

- *The antenna will appear to point below where the satellite is located. Do not re-adjust the antenna.*

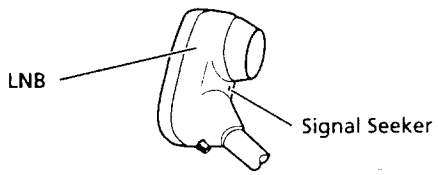


Fine-tuning the Antenna Using the Signal Seeker

The strength of the signal received from the satellite should be optimized. If the signal gets too weak, the picture will freeze. Rain and snow can reduce the signal strength, so optimizing the signal strength will help to eliminate their affect. Use the Signal Seeker to fine-tune the aim of the antenna. The Signal Seeker light blinks slowly when the antenna is receiving a weak signal and blinks faster as the signal grows stronger.

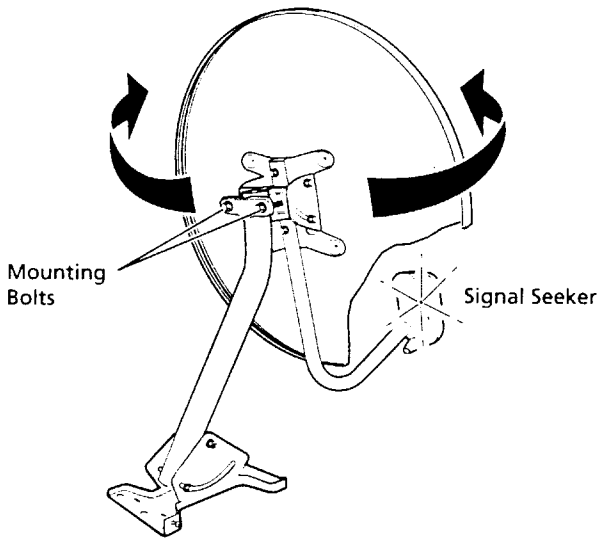
Note

- *The Signal Seeker will only work when the on-screen signal strength meter is displayed on your TV.*



1 To fine-tune the azimuth, loosen the two mounting bolts that hold the antenna on the mast or pole.

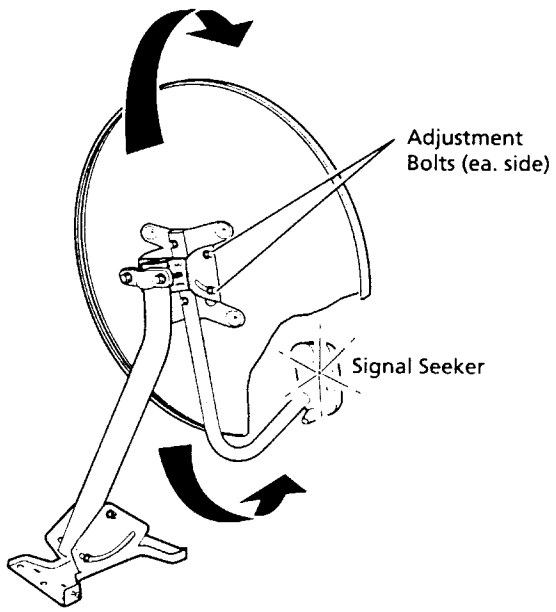
2 Slowly move the antenna from side-to-side until the Signal Seeker gives the fastest blink.



3 Secure the bolts but do not overtighten; you will need to loosen them later to further fine-tune the antenna.

4 To fine-tune the elevation, loosen the four adjustment bolts on the back of the antenna.

5 Gently tilt the antenna up and down until the Signal Seeker gives the fastest blink.



6 Secure the bolts but do not overtighten; you will need to loosen them later to further fine-tune the antenna.

7 Fine-tune the azimuth once again using steps 1-3.

(continued)

Fine-tuning the Antenna Using the Signal Strength Meter

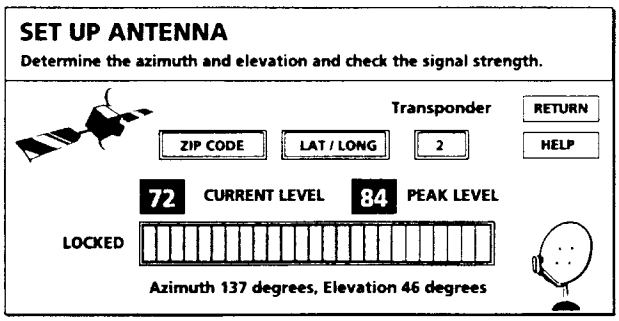
Complete the aiming procedures by fine-tuning the antenna using the Signal Strength Meter. The on-screen display shows a numeric value for the signal strength ranging from 0 to 100. A reading of 0 indicates no signal is being received and a reading of 100 is the strongest possible signal. To use the Signal Strength Meter, you can:

- ❑ Have someone watch the on-screen signal meter and call out the signal strength level while you adjust the antenna.
- ❑ Position the TV so you can see the screen from the antenna.

Notes

- *Adjust the signal to its peak level to minimize signal loss due to rain or snow.*
- *You probably will not receive a signal strength of 100. Different areas of the country may receive different peak levels. This is normal.*

1. Adjust the azimuth by loosening the two mounting bolts that secure the antenna to the mast or pole.
2. Slowly move the antenna side to side until you find the strongest signal.
3. Tighten the mounting bolts (torque 36~45 lb-in).
4. Adjust the elevation by loosening the four adjustment bolts on the back of the antenna.
5. Slowly tilt the antenna up and down until you find the strongest signal.
6. Tighten the adjustment bolts (torque 36~45 lb-in).



The antenna is now installed and properly adjusted to receive satellite signals. The final step in the installation process is grounding the antenna and grounding block.

Grounding the Antenna and Cables

This section contains instructions for grounding the antenna and cables to prevent possible damage from electrical charges and nearby lightning strikes. Refer to the National Electrical Code in the Appendix for more specific information on grounding requirements. There are two procedures you need to complete:

- ❑ Grounding the Antenna
- ❑ Grounding the Cables

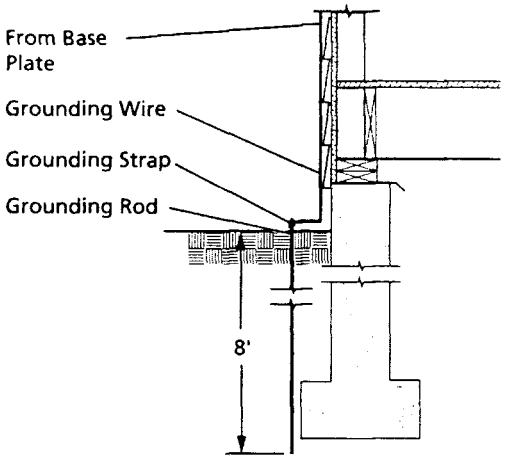
Tools and materials needed to ground the antenna and cables:

Grounding rod (8 ft.)
*Grounding strap
*Grounding wire (30 ft.)
Ladder
Phillips screwdriver
Sledgehammer

**Included in the Installation Kit.*

Grounding the Antenna

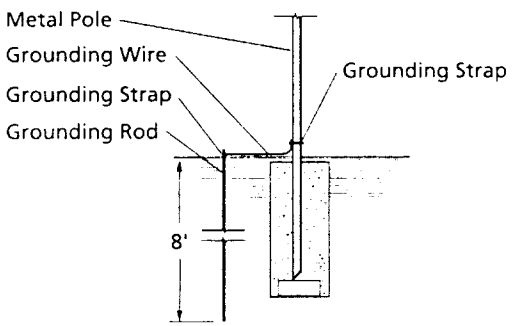
Ground the antenna to protect it from possible damage from unwanted electrical charges.



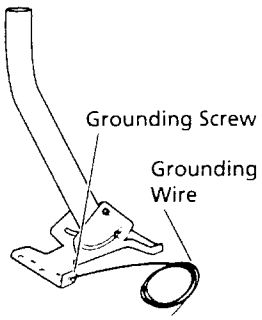
1 Install a grounding rod as close to the mast or pole as possible. The rod should be 8 feet long and driven 8 feet into the ground. Any deviation from these specifications should conform to the National Electrical Code and local code requirements.

(continued)

2 Locate the grounding point on the mast or metal pole. On the mast, the grounding point is located on the mounting foot. On the metal pole, the grounding point is a grounding strap you attach to the base of the pole.



Metal Pole



Mounting Foot

3 Attach one end of a #10 copper grounding wire to the mast or pole by looping the bare wire two turns around the grounding screw or grounding strap.

4 Tighten the screw or strap until the wire is secure.

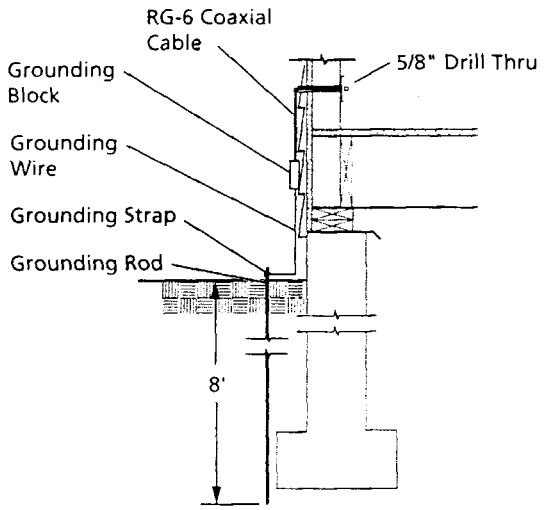
5 Route the other end of the grounding wire to the grounding rod in a straight and direct path.

6 Connect the grounding wire to the grounding rod using a grounding strap. Install the strap above ground unless it is designed for underground use.

Complete the grounding procedure by grounding the cables.

Grounding the Cables

Ground the cables to protect the receiver from possible damage from unwanted electrical charges.

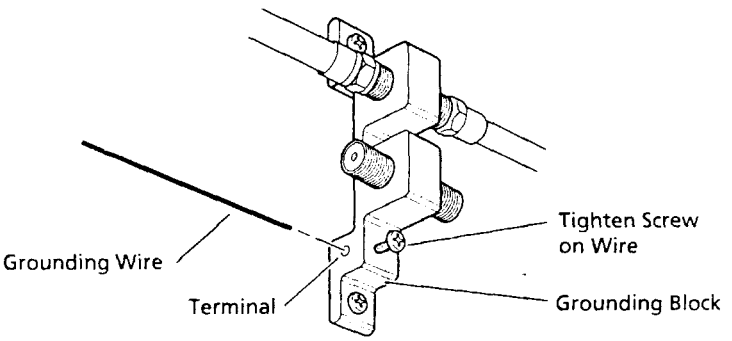


Notes

- *The cables and antenna can be grounded on the same grounding rod.*
- *The grounding wire should be short and straight. Connect it close to where it enters the house.*

1 Install a grounding rod as close to the grounding block as possible. The rod should be 8 feet long and driven 8 feet into the ground. Any deviation from these specifications must conform to the National Electrical Code and local code requirements.

2 Attach a #10 copper grounding wire to the grounding block by inserting one end of the bare wire into the grounding wire terminal and tightening the screw until the wire is secure.



(continued)

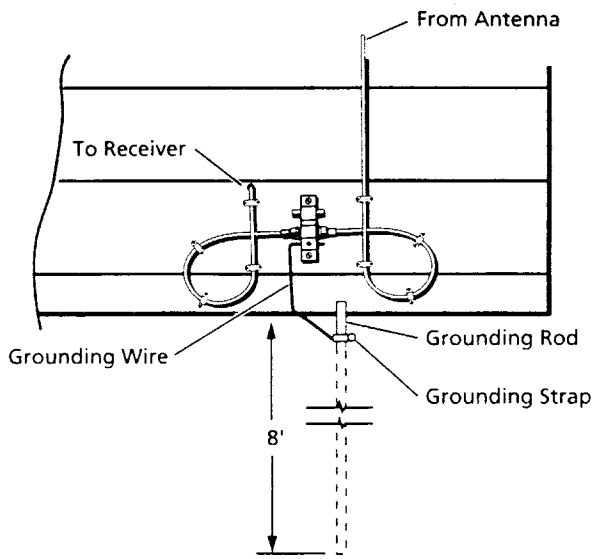
Grounding the Antenna and Cables (continued)

Note

- *The grounding block may also be grounded to a cold water pipe. Refer to the National Electrical Code in the Appendix.*

3 Route the other end of the grounding wire to the grounding rod in a straight and direct path.

4 Connect the grounding wire to the grounding rod using the grounding strap. Install the strap above ground unless it is designed for underground use.



Congratulations! The antenna and cables are grounded and you have completed the antenna installation. Refer now to the manual you received with your Sony Digital Satellite Receiver to learn about hooking up other components to your receiver.

Appendix

Other Information

The sections covered in this appendix are:

- ❑ National Electrical Code **48**
- ❑ Specifications **50**
- ❑ Limited Warranty **51**
- ❑ Glossary **53**
- ❑ Index **55**

National Electrical Code

The following portions of the National Electrical Code are provided to assist you with the installation of your digital satellite antenna. These pages represent only a portion of the entire National Electrical Code, and should be consulted for reference purposes only. For the complete code, please refer to the *National Electrical Code Handbook.*

250-1. Scope. This article covers general requirements for grounding and bonding of electrical installations, and specific requirements in (a) through (f) below.

(a) Systems, circuits, and equipment required, permitted, or not permitted to be grounded.

(b) Circuit conductor to be grounded on grounded systems.

(c) Location of grounding connections.

(d) Types and sizes of grounding and bonding conductors and electrodes.

(e) Methods of grounding and bonding.

(f) Conditions under which guards, isolation, or insulation may be substituted for grounding.

250-81. Grounding Electrode System. If available on the premises at each building or structure served, each item (a) through (d) below, and any made electrodes in accordance with Sections 250-83 (c) and (d), shall be bonded together to form the grounding electrode system. Interior metal water piping located more than 5 feet (152 cm) from the point of entrance to the building shall not be used as a conductor to interconnect the electrodes and the grounding electrode conductor. The bonding jumper shall be installed in accordance with Sections 250-92 (a) and (b), shall be sized in accordance with Section 250-94, and shall be connected in the manner specified in section 250-115. The unspliced grounding electrode conductor shall be permitted to run to any convenient grounding electrode available in the grounding electrode system. It shall be sized for the largest grounding electrode conductor required among all the available electrodes.

(a) Metal Underground Water Pipe. A metal underground water pipe in direct contact with the earth for 10 feet (3.05 m) or more (including any metal well casing effectively bonded to the pipe) and electrically continuous (or made electrically continuous by bonding around insulating joints or sections or insulating pipe) to the points of connection of the grounding electrode conductor and the bonding conductors. Continuity of the grounding path or the bonding connection to interior piping shall not rely on water meters. A metal underground water pipe shall be supplemented by an additional electrode of a type specified in Section 250-81 or in Section 250-83. The supplemental electrode shall be permitted to be bonded to the grounding electrode conductor, the grounded service-entrance conductor, the grounded service raceway, or any grounded service enclosure.

250-83. Made and Other Electrodes. Where none of the electrodes specified in Section 250-81 is available, one or more of the electrodes specified in (b) through (d)* below shall be used. Where practicable, made electrodes shall be embedded below permanent moisture level. Made electrodes shall be free from nonconductive coatings, such as paint or enamel. Where more than one electrode is used, each electrode of one grounding system (including that used for lightning rods) shall not be less than 6 feet (1.83 m) from any other electrode of another grounding system.

(c) Rod and Pipe Electrodes. Rod and pipe electrodes shall not be less than 8 feet (2.44 m) in length and shall consist of the following materials, and shall be installed in the following manner:

(1) Electrodes of pipe or conduit shall not be smaller than $^{3}/_{4}$-inch trade size and, where of iron or steel, shall have the outer surface galvanized or otherwise metal-coated for corrosion protection.

(2) Electrodes of rods of iron or steel shall be at least $^{5}/_{8}$ inch (15.87 mm) in diameter. Stainless steel rods less than $^{5}/_{8}$ inch (15.87 mm) in diameter, nonferrous rods, or their equivalent shall be listed and shall not be less than $^{1}/_{2}$ inch (12.7 mm) in diameter.

(3) The electrode shall be installed such that at least 8 feet (2.44 m) length is in contact with the soil. It shall be driven to a depth of not less than 8 feet (2.44 m) except that, where rock bottom is encountered, the electrode shall be driven at an oblique angle not to exceed 45 degrees from the vertical or shall be buried in a trench that is at least $2^{1}/_{2}$ feet (762 mm) deep. The upper end of the electrode shall be flush with or below ground level unless the aboveground end and the grounding electrode conductor attachment are protected against physical damage as specified in Section 250-117.

250-115. Connection to Electrodes. The grounding conductor shall be connected to the grounding electrode by exothermic welding, listed lugs, listed pressure connectors, listed clamps, or other listed means. Connections depending on solder shall not be used. Ground clamps shall be listed for the materials of the grounding electrode and the grounding electrode conductor and, where used on pipe, rod, or other buried electrodes, shall also be listed for direct soil burial. Not more than one conductor shall be connected to the grounding electrode by a single clamp or fitting unless the clamp or fitting is listed for multiple conductors. One of the methods indicated in (a), (b), (c), or (d)* below shall be used.

(a) Bolted Clamp. A listed bolted clamp of cast bronze or brass, or plain or malleable iron.

(b) Pipe Fitting, Pipe Plug, etc. A pipe fitting, pipe plug, or other approved device screwed into a pipe or pipe fitting.

(c) Sheet-Metal-Strap Type Ground Clamp. A listed sheet-metal-strap type ground clamp having a rigid metal base that seats on the electrode and having a strap of such material and dimensions that it is not likely to stretch during or after installation.

810-1. Scope. This article covers radio and television receiving equipment and amateur radio transmitting and receiving equipment, but not equipment and antennas used for coupling carrier current to power line conductors.

810-15. Grounding. Masts and metal structures supporting antennas shall be grounded in accordance with Section 810-21.

810-21. Grounding Conductors — Receiving Stations. Grounding conductors shall comply with (a) through (j) below.

(a) Material. The grounding conductor shall be of copper, aluminum, copper-clad steel, bronze, or similar corrosion-resistant material.

(b) Insulation. Insulation on grounding conductors shall not be required.

(c) Supports. The grounding conductors shall be securely fastened in place and shall be permitted to be directly attached to the surface wired over without the use of insulating supports.

(d) Mechanical Protection. The grounding conductor shall be protected where exposed to physical damage, or the size of the grounding conductors shall be increased proportionately to compensate for the lack of protection.

(e) Run in Straight Line. The grounding conductor for an antenna mast or antenna discharge unit shall be run in as straight a line as practicable from the mast or discharge unit to the grounding electrode.

(f) Electrode. The grounding conductor shall be connected as follows:

(1) To the nearest accessible location on (1) the building or structure grounding electrode system as covered in Section 250-81, (2) the grounded interior metal water piping system as covered in Section 250-80(a), (3) the power service accessible means external to enclosures as covered in Section 250-71(b), (4) the metalic power service raceway, (5) the service equipment enclosure, or (6) the grounding electrode conductor or the grounding electrode conductor metal enclosures; or

(2) If the building or structure served has no grounding means, as described in (f)(1), to any one of the individual electrodes described in Section 250-81; or

(3) If the building or structure served has no grounding means, as described in (f)(1), or (f)(2), to (1) an effectively grounded metal structure or (2) to any of the individual electrodes described in Section 250-83.

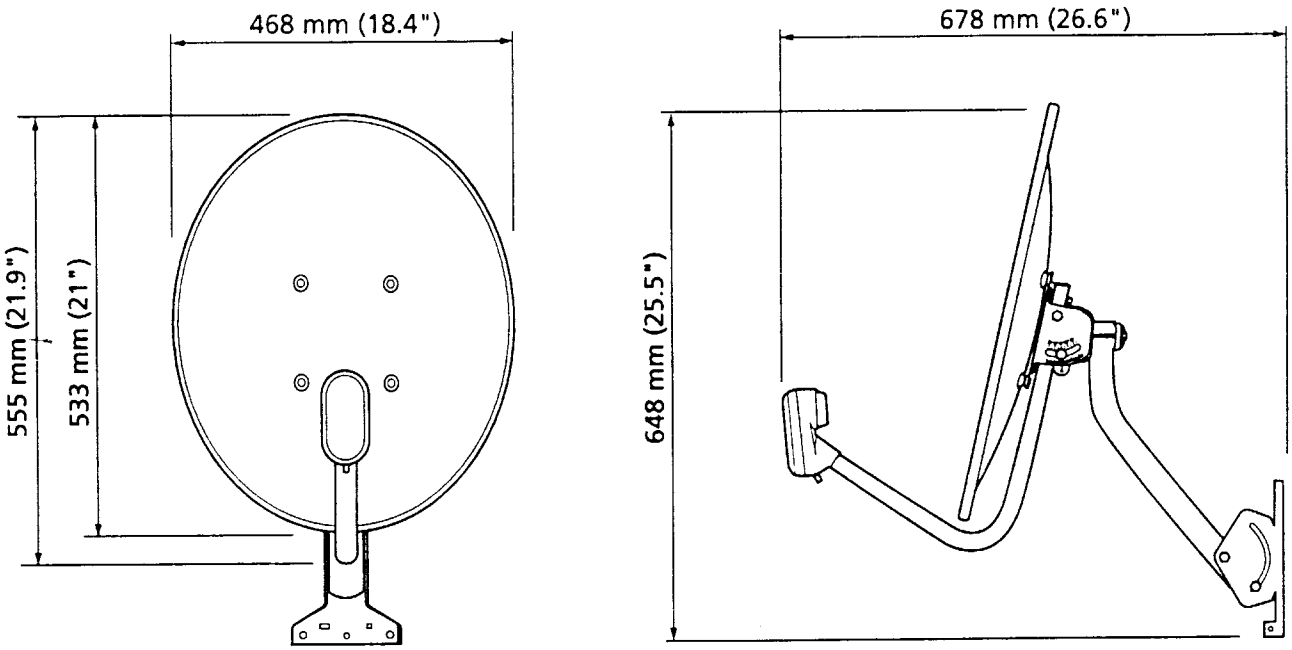
(g) Inside or Outside Building. The grounding conductor shall be permitted to be run either inside or outside the building.

(h) Size. The grounding conductor shall not be smaller than No. 10 copper or No. 8 aluminum or No. 17 copper-clad steel or bronze.

(i) Common Ground. A single grounding conductor shall be permitted for both protective and operating purposes.

(j) Bonding of Electrodes. A bonding jumper not smaller than No. 6 copper or equivalent shall be connected between the radio and television equipment grounding electrode and the power grounding electrode system at the building or structure served where separate electrodes are used.

Specifications



The dimensions shown are for an elevation setting of 40°.

Input Frequency	12.2~12.7 GHz
Output Frequency	950~1450 MHz
Output Connector	F-Type Female
Power Consumption	3.0 W max.
Supply Voltage	DC + 11.5~14.0 V for RHCP DC + 16.0~19.0 V for LHCP
Width	468 mm (18.4 in.)
Height	648 mm (25.5 in.)
Depth	678 mm (26.6 in.)
Mass	3.5 kg. (7 lbs. 10 oz.)

Supplied Accessories

Snap in Cable Guides	2 pcs.
Weatherboot	1 pc. (SAN-18S1) 2 pcs. (SAN-18D1)

Optional Sony Brand DSS Accessories

Installation Kit	ANJ-DS1
Amplifier	EAC-DA1
Diplexer	EAC-DD1
Voltage Switch	EAC-DV1
Multi-Room AV Distribution Sytem	MDR-D1
Universal Remote Commander	RM-Y130
Coaxial Cable 25'	SAK-C25
Coaxial Cable 75'	SAK-C75
Flat Cable	SAK-F1

Limited Warranty

Digital Satellite Systems

SONY ELECTRONICS INC. ("SONY") warrants this Product (including any accessories) against defects in material or workmanship as follows:

1. LABOR: For a period of 90 days from the original date of purchase, if the Product is determined to be defective, SONY will repair or replace the Product at no charge. After this 90 day period, you must pay for all labor charges.

2. PARTS: For a period of one (1) year from the original date of purchase, SONY will supply, at no charge, new or rebuilt replacements in exchange for defective parts. Any replacements will be warranted for the remainder of the original warranty period or (90) days from installation by SONY's authorized facility, whichever is longer.

3. ACCESSORIES: Parts and labor for all accessories are for one (1) year.

4. IN-HOME: For a period of one (1) year from installation date, if the unit was professionally installed by an authorized SONY Digital Satellite System Installer and the LNB (Electronic Antenna Element) fails to function properly, SONY will repair or replace the defective LNB with a new or rebuilt part. Labor to repair or replace the LNB (after 90 days from purchase) will be at your expense. If no problem is found, or any other item fails, it will be your responsibility to pay the installer their regular rate for an in-home service call.

To obtain warranty service, you must take the Product, or deliver the Product freight prepaid, in either its original packaging or packaging affording an equal degree of protection, to a SONY authorized Digital Satellite System service facility. Please see the following page for the number to call to locate the closest facility.

This warranty does not cover customer instruction, installation, set up adjustments or signal reception problems.

This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of, or to any part of the Product, including the antenna. This warranty does not cover improper installation (if self installed), loss of use of the product, or wasted programming charges due to product malfunction. This warranty does not cover damage due to improper operation or maintenance, connection to improper voltage supply, or attempted repair by anyone other than a facility authorized by SONY to service the Product. This warranty does not cover Products sold AS IS or WITH ALL FAULTS. This warranty is valid only in the United States.

Proof of purchase in the form of a bill of sale or receipted invoice which is evidence that the unit is within the Warranty period must be presented to obtain warranty service.

REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE CONSUMER. SONY SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY ON THIS PRODUCT. IN NO EVENT SHALL SONY BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT. UNDER NO CIRCUMSTANCES SHALL SONY's LIABILITY, IF ANY, EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCT. EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.

(continued)

Limited Warranty (continued)

This warranty is invalid if the factory applied serial number has been altered or removed from the Product.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you. In addition, if you enter into a service contract with the SONY Partnership within 90 days of the date of sale, the limitation on how long an implied warranty lasts does not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

For your convenience, SONY ELECTRONICS INC. has established telephone numbers for frequently asked questions:

To locate the servicer or dealer nearest you,

For service assistance or resolution of a service problem, or

For Product information or operation call:

SONY DIGITAL SATELLITE SYSTEM INFORMATION CENTER
1-800-838-7669

For an accessory or part not available from your authorized dealer, call:

1-800-488-SONY (7669)

Glossary

A

Azimuth
A compass angle measured from the north that indicates the relative direction of the satellite from your location. This angle, along with your elevation, allows you to locate the satellite and point the antenna in the proper direction.

Amplifier
A device used to increase signal strength when the signal strength meter reads less than 60. If the signal strength meter reads 60 or above and the amplifier is attached, the signal strength will be unaffected.

B

Base Plate
The metal foot that is attached to the mast of the antenna and attaches to a mounting surface.

C

Composite Materials
Wood products that are composed of two distinct materials, such as wood and glue, are referred to as composite materials. These products are not as strong or structurally rigid as solid wood.

D

Drip Loop
A four to six inch loop in the RG-6 coaxial cable which prevents water from running into the cable connections at the grounding block.

DSS
The Digital Satellite System. This system consists of a small antenna and a receiver that process audio and video signals transmitted by satellites that orbit over the equator.

E

Elevation
An angle above the horizon. This angle, along with your azimuth, allows you to locate the satellite and point the satellite antenna in the direction of the satellite.

(continued)

G

Grounding
A method of directing electrical currents into the earth. This provides a conductive outlet that diffuses destructive charges.

Grounding Block
A barrel connector with a screw that connects two coaxial cables to a grounding wire.

Grounding Rod
A metal pole driven into the ground that creates a path for electrical currents to follow.

Grounding Wire
A copper wire that connects an electrical circuit to a grounding rod.

L

Latitude
The distance from the equator to a point (north or south) on the earth that is measured in degrees.

LNB
Low Noise Block. The LNB is mounted at the focal point of a satellite antenna to receive signals transmitted from the satellite. It converts the high signal frequency to a lower signal frequency.

Longitude
The distance from the prime meridian to a point (east or west) on the earth that is measured in degrees.

M

Main Menu
The first menu screen that is displayed when the MENU button on the remote control is pressed. It is through the main menu that you can set up your dish and fine-tune the aiming of your antenna.

Mast
The metal pole that is connected to the base plate and the antenna. If you install the antenna on a metal pole, the pole is considered a mast.

R

RG-6 Coaxial Cable
A type of cable that carries high frequency satellite signals from the LNB to the receiver, and DC voltage from the receiver to the LNB.

S

Signal Seeker
A light on the antenna's LNB that blinks while you are fine-tuning the antenna.

Signal Strength Meter
An on-screen meter that is used to measure the strength of the satellite signal when fine-tuning the antenna.

Index

A

Aiming **36-42**
Azimuth **10-12, 39-41**

B

Base plate **8, 20, 25, 28**
Brick surface **24-26**

C

CH3/CH4 switch **37**
Choosing an installation site **13**
Cinder block surface **27-30**
Compass **11, 39**
Composite materials **19**

D

Drip loop **34-35**
DSS
- function switch **37**
- on-screen displays **37, 38**
- signal strength meter **38**

E

Elevation **10, 12, 39, 41-42**

F

Fine-tuning **40-42**

G

Grounding **44-46**
Grounding block **34-35, 46**

I

Installation
- antenna **31-32**
- brick surface **24-26**
- cables **33-34**
- chimney **13**
- cinder block surface **27-30**
- grounding block **34-35, 46**
- metal pole **16-18**
- professional installation **7**
- self-installation **7**
- wooden surface **19-23**

Installation menu **37**

L

LED **40-41**
Light Emitting Diode, *See* **LED**
LNB **8, 33**
LNB support arm **8, 33**
Low Noise Blocker, *See* **LNB**

M

Map **10**
Mast **8, 22-23, 25-26, 29-30, 32, 34, 39, 41-42**
Menu button **37**
Metal pole **16-18, 32-35**

N

National Electrical Code **2, 48-49**

O

Overview **7**
UHF/VHF/SAT OUT **38**

R

Rafter **21-23**
Reference points **12**
Reflector **8, 31-32**
RG-6 coaxial cable **33-36**

S

Satellite
- directional coordinates **10-12, 38-39**
- location **10**

UHF/VHF jack **37**
Self-installation kit **7**
Set up antenna **38**
Signal Strength Meter **38, 42**
Site selection **13**
Snap-in cable guides **8, 34**
Stud **20-21, 23**
System menu **37**

U

Unpacking **8**

W

Weatherboot **8, 33**
Wooden surface **19-23**

Z

Zip code screen **38**